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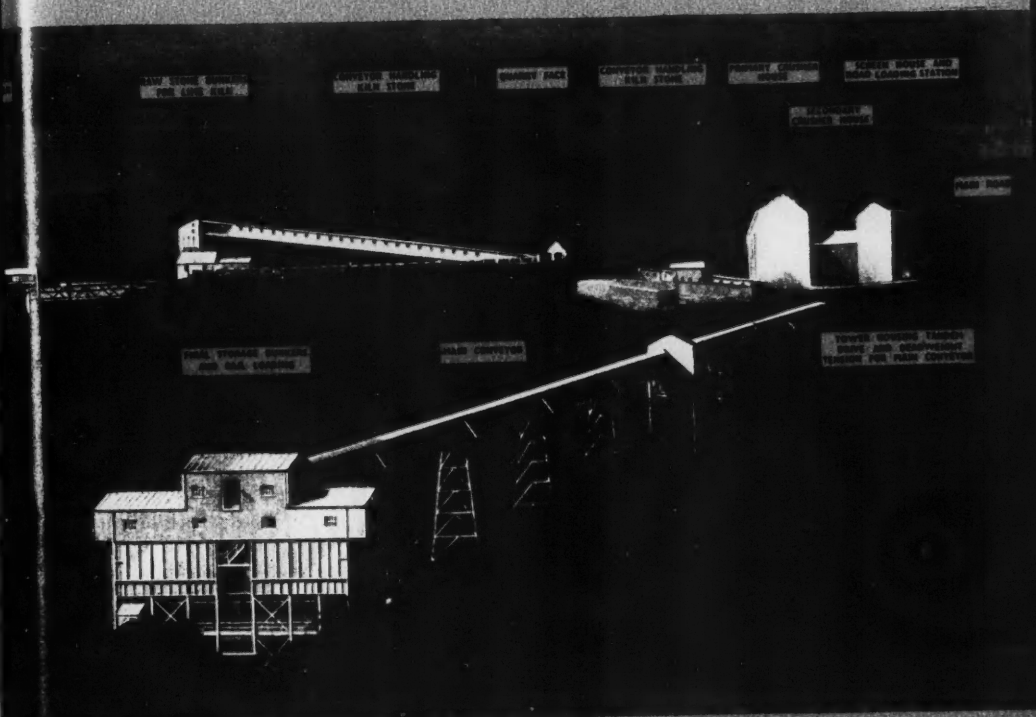

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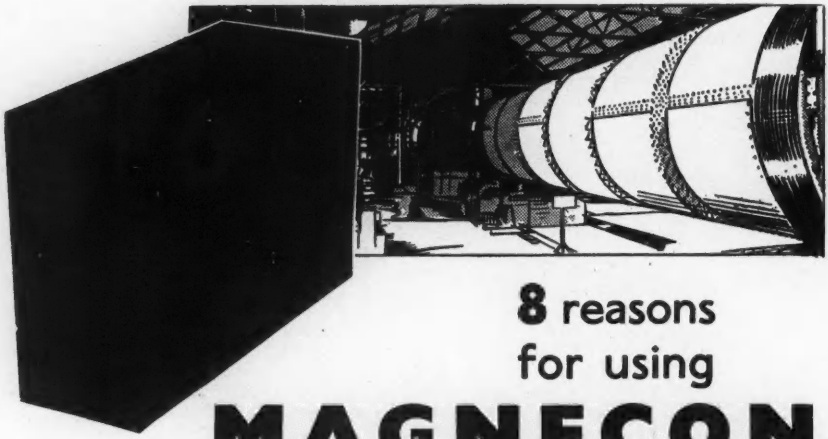

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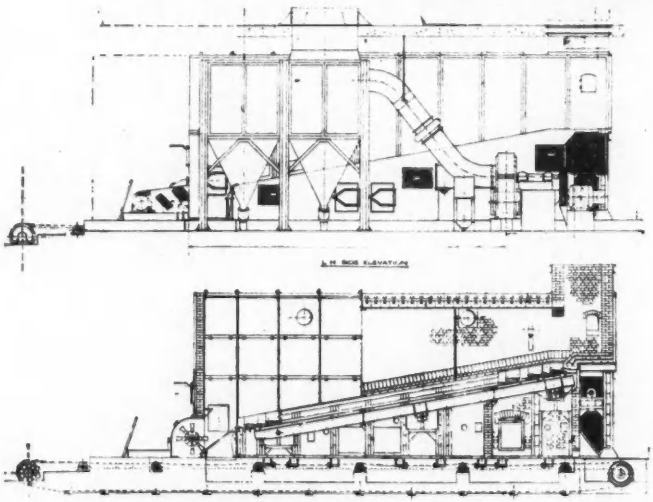

(British Patents Nos. 519,018, 519,057, 580,583, 611,296)

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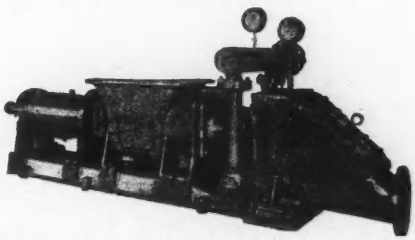

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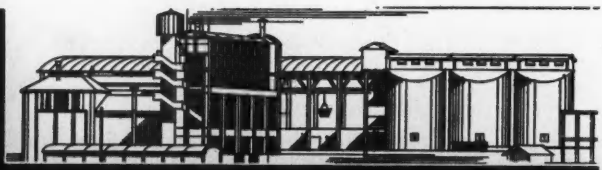

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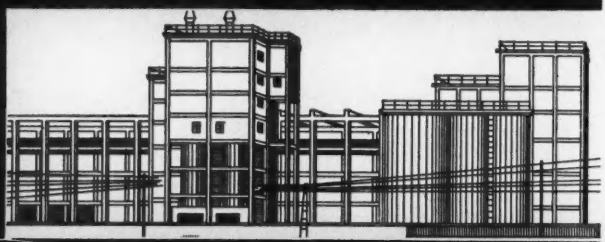

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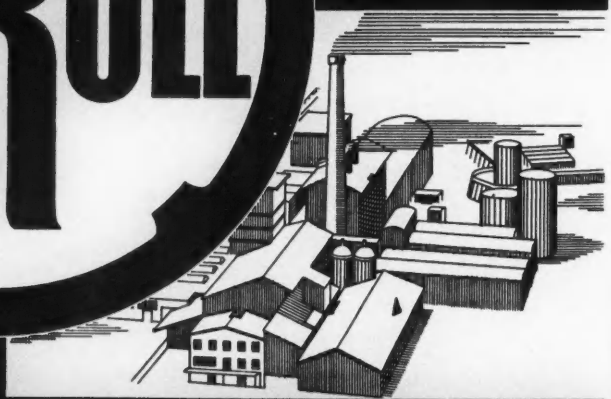

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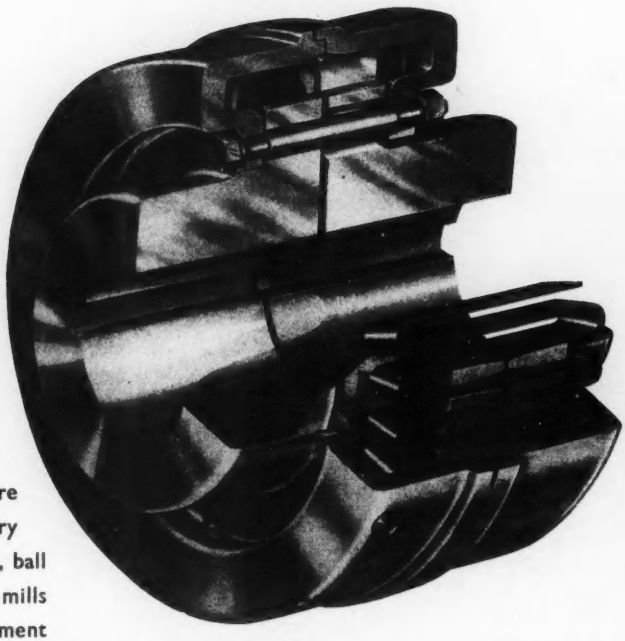

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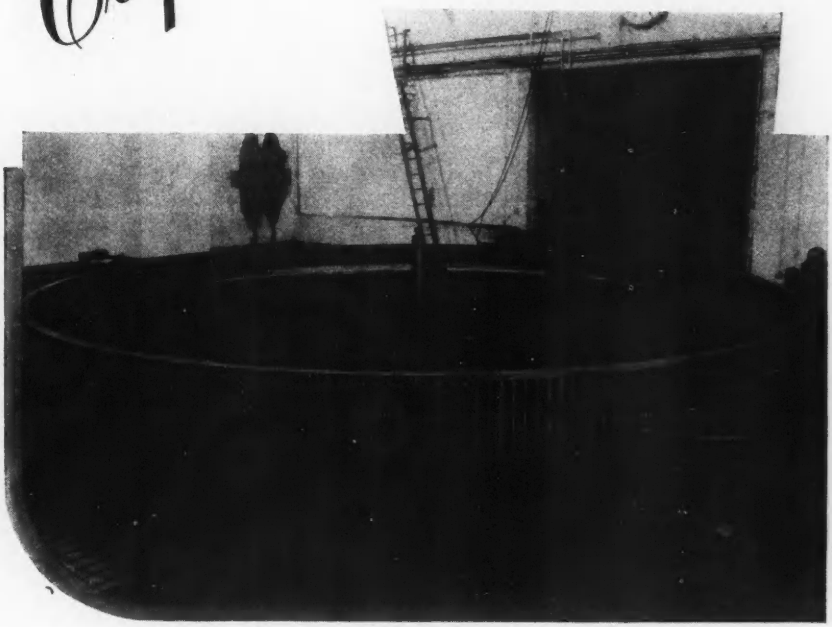

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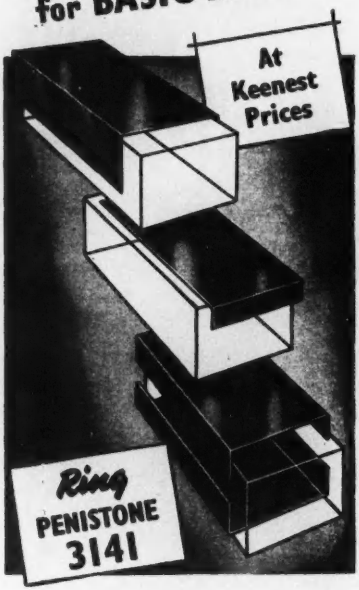

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VOLUME XXXI. NUMBER 2. MARCH, 1958

Uttar Pradesh Cement Works, India.*

By H. SWIFT, M.I.Mech.E., M.Inst.B.E.
OF HENRY POOLEY, CONSULTING ENGINEERS AND GENERAL MANAGERS OF THE WORKS

Grinding the Raw Materials.

THE grinding of the raw materials and the preparation of slurry are carried out in a closed-circuit system. Limestone, shale, and laterite, with sufficient water to give a moisture content of 30 per cent. to 35 per cent. at the outlet of the mill, are delivered to the inlet of a short ball mill. The ground material, discharged from the mill in the form of slurry, is further diluted to produce a water content of 85 per cent. to 90 per cent. in order to obtain rapid settlement of the coarse particles. This slurry is passed to a classifier where the coarse particles settle, are raked into a chute, and returned to the feed-end of the mill. The rest of the slurry is discharged over a weir and pumped to the thickeners, where the fine particles settle, and slurry containing 35 per cent. to 38 per cent. of water is pumped to storage while the surplus water is returned to the circuit. The process allows for control of the fineness of grinding, the final moisture content of the slurry, and to some extent the grading of the slurry particles. The fineness is controlled by raising the moisture content of the slurry delivered to the classifier and also by increasing the level of the liquid in the classifier. The water content of the slurry is controlled by the speed of extraction from the thickeners; the faster the rate of extraction the higher the moisture content. When grinding medium-hard limestone and shale crushed to pass a 1-in. square mesh, the power consumption of the mill and auxiliaries is 17·7 kWh. per ton when grinding to a fineness of 8 per cent. retained on a sieve with 170 meshes per inch, and the consumption of the steel-ball grinding media is 0·65 lb. per ton of material ground. There are two mills for grinding raw material and two mills for grinding cement.

High-grade and low-grade limestone and laterite are taken from the store by the crane and discharged into reinforced concrete bunkers over the raw mills and

* Continued from JANUARY 1958

projecting into the main stores building. Each bunker is divided into a compartment for high-grade limestone with a capacity of 150 tons, a compartment for low-grade limestone with a capacity of 65 tons, and a compartment for laterite with a capacity of 40 tons. The lower part of each compartment forms a hopper with a square opening, to which are attached a valve and telescopic sleeve for regulating the supply to the feed-tables; there are a 72-in. diameter and a 48-in. diameter table-feeder for the two grades of limestone and a 36-in. diameter table-feeder for laterite, which regulate the proportions of raw materials delivered to the mills. All the table-feeders have cast-iron bodies with machine-cut steel gears and adjustable ploughs with micrometer adjustment. The 72-in. feeder is driven through a worm reduction-gear by a 5-h.p., 720 r.p.m. motor and the 48-in. and 36-in. feeders by 2½ h.p., 720 r.p.m., motors. The three feeders discharge into a common chute at the inlet end of the mill, where the rate of feed to the mill is controlled.

The mills are 10 ft. diameter by 18 ft. long, divided into two compartments, and are arranged for closed-circuit wet grinding in combination with Dorr classifiers and thickeners. The mills have a capacity of 28 tons dry weight per hour when grinding to 8 per cent. residue on the 170-mesh sieve. The first compartment is lined with chrome-steel stepped plates and charged with 18 tons of high-carbon steel forged balls 4 in. to 2½ in. diameter; the second compartment is lined with chrome-steel corrugated plates, and is charged with 33 tons of high-carbon steel forged balls 2 in. to 1¼ in. diameter. Between the two chambers and at the discharge end of the second chamber, plates of chrome steel in five sections with

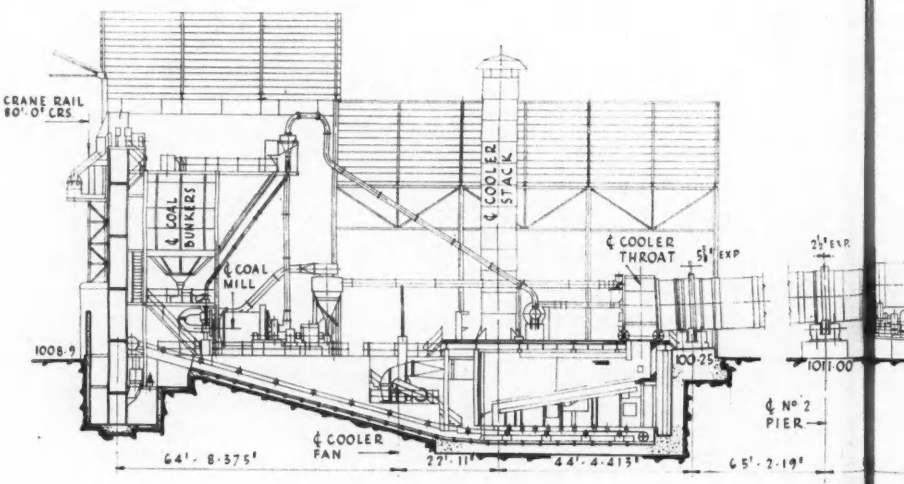
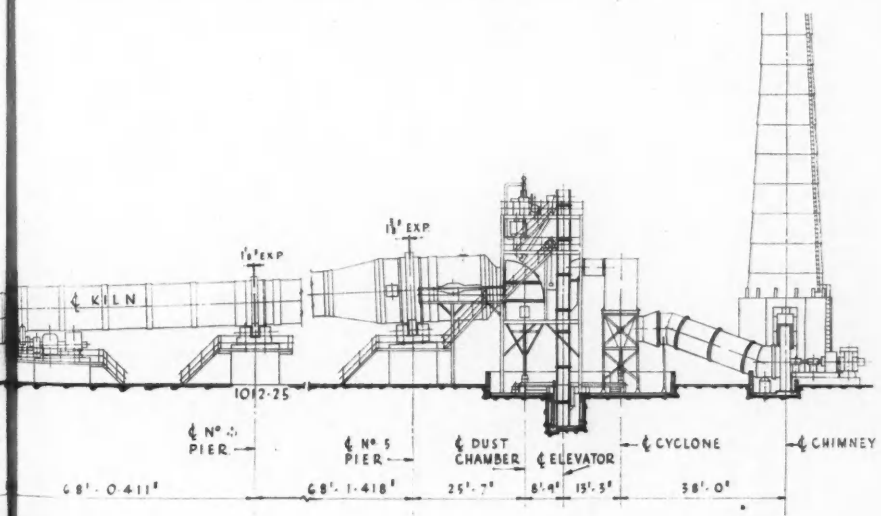


Fig. Kiln

slots ½-in. to ⅝-in. wide by 6 in. long are supported in place by chrome-steel ring segments. Between the outlet plate and the end of the mill are lifters for discharging the ground material through the mill trunnion. At each end of the shell is a cast-steel head supported on a water-cooled, self-aligning, oil-lubricated bearing 36-in. diameter by 24 in. long. Electric lights are fitted in each bearing for inspection of the oil circulation. In the outlet end is a helix for propelling the material from the discharge lifters to a sand-wheel 11 ft. diameter by 12 in. wide bolted to the outlet trunnion, revolving with the mill, and lifting the product into a Dorr classifier. To the flange of the outlet head is bolted a cast-steel spur-wheel engaging with a forged-steel pinion which is keyed to a forged-steel shaft 9 in. diameter mounted in three ring-lubricated countershaft bearings 18 in. long. Keyed to one end of the shaft is half a Bibby-type flexible coupling; the other half of the coupling is keyed on to a totally-enclosed gear which reduces the speed of the 775-h.p. synchronous induction motor from 750 r.p.m. to 101 r.p.m.

The slurry, containing from 30 per cent. to 35 per cent. of water, is further diluted so that the total water content of the slurry entering the classifier by the bifurcated trough is 85 per cent. to 90 per cent. This slurry is delivered to the classifier about 10 ft. from the overflow weir, where the coarse particles settle in the classifier and are raked into a chute where they are picked up by a scoop for further passage through the mill. Due to the agitation of the reciprocating rakes, the fine particles in the slurry remain in suspension and are delivered over a weir to a sump for pumping to the thickeners. Each rake is adjustable in height, and provision is made for raising all the rakes for easy starting; a system of cranks,



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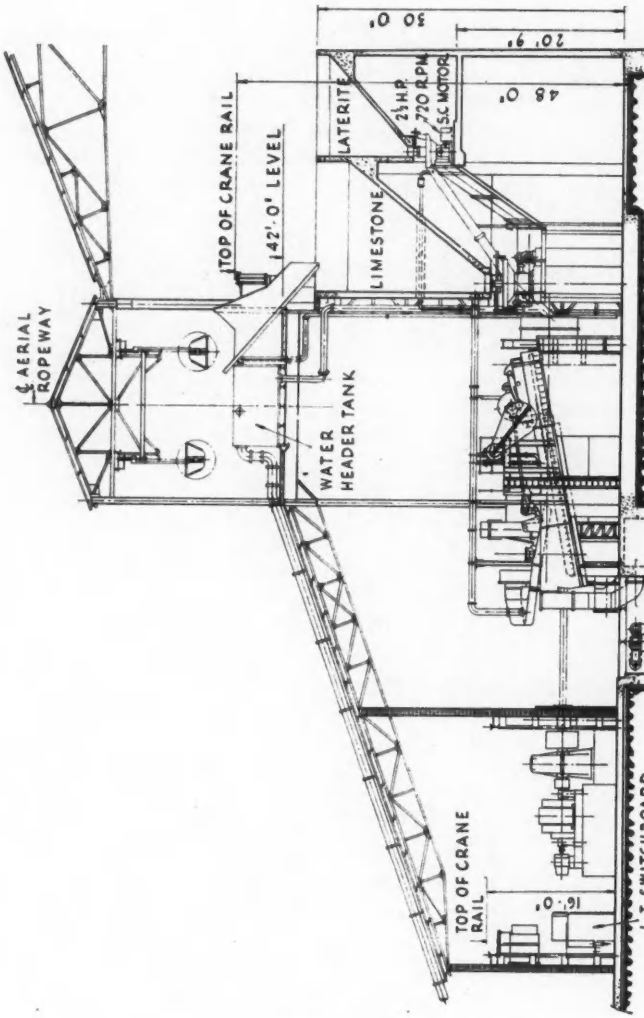


Fig. 6.—Section showing Raw Mills.

eccentrics, and bellcranks provides a linear motion of the rakes along the floor of the classifier. Three 8-in. Wilfley centrifugal pumps (one a standby) are installed for pumping the slurry from the sump of the classifier to the thickeners. The pumps are fitted with hard white iron parts to resist wear, and are driven through a vee-belt by 25-h.p. motors running at 960 r.p.m.; the pumps are controlled by high-level float-switches fixed in the sump.

The slurry is discharged in two wooden troughs which in turn discharge into the centre of the rotary mechanism of two Dorr thickeners (*Fig.* 8); the mechanism is mounted on a concrete pier at the centre of a circular reinforced concrete tank 100 ft. diameter and 9 ft. deep at the periphery, and with a conical bottom tapering at the centre to 15 ft. 9 in. deep. The slurry from the troughs is distributed at the centre along two rotary steel launders which terminate in a well, depositing the slurry 1 ft. 4 in. below the surface of the tank and 50 ft. from the centre. A pair of long arms and a pair of short arms fitted with blades are mounted on a central ball-bearing 7 ft. 6 in. diameter. The arms rotate at 0·0471 r.p.m. and are driven through a chain drive by a back-geared 3-h.p., 100 r.p.m. motor. The

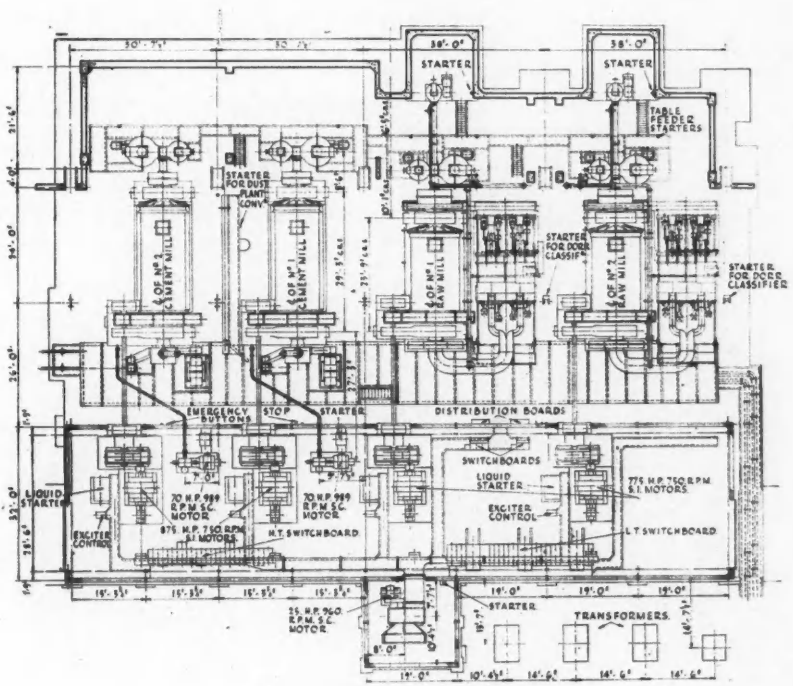


Fig. 7.—Plan of Cement Mills and Raw Mills.

long rake-arms are fitted with pickets for even distribution of the slurry to the lowest part of the conical bottom. Thickened slurry is removed from a cone section adjacent to the central pillar through two outlets flanged to 4-in. pipes. The separated water overflows a sawtooth weir at the periphery of the thickeners into an annular concrete trough formed in the top of the wall of the thickener. The driving mechanism is fitted with a slipping clutch connected to an electrical alarm system to give warning of any increase in load on the motor due to excessive thickening of the slurry.

From the base of the thickeners the thickened slurry, containing 36 per cent. of water, is drawn through pipe-lines by three Dorrco diaphragm suction pumps. The pump-plungers are operated from a reciprocating arm by a connecting rod from a variable-speed gear driven by a 7½-h.p., 720 r.p.m. motor. From the pumps the slurry is discharged through launders into a sump, where three 4-in. Wilfley centrifugal pumps (one a standby), each driven through vee-belts by a 20-h.p. 1440 r.p.m. motor, pump the slurry from the sump through piping so arranged that the slurry from any pump can be supplied to any one of eight storage tanks or can be delivered back to the thickeners for recirculation.

The surplus water from the thickeners is discharged from the peripheral trough at the top of the thickeners into a sump in the pumphouse, where it is pumped by three 6½-in. three-stage axial-flow pumps to a steel header tank of 8500 gallons capacity over the raw mills. Each pump has a capacity of 1000 gall. per minute, and is directly coupled to a 25-h.p., 2880 r.p.m., motor. The pumps are controlled by high-level and low-level float-switches mounted in the sump.

There are eight slurry-storage tanks, 26 ft. diameter by 20 ft. high, four for receiving slurry from the thickeners for correction and four for storing corrected slurry for delivery to the kilns. Each tank has a central stirring mechanism to which are attached four arms with blades and air nozzles; the central shaft is

Fig. 8.—The Thickeners.

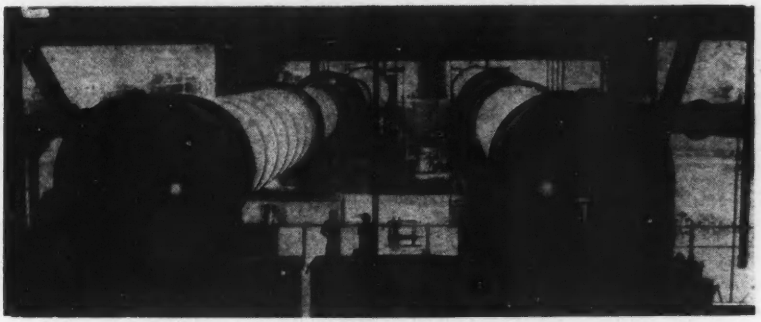


Fig. 9.—The Kilns.

connected by vee-ropes to a 5-h.p., 960 r.p.m., motor. Two water-jacketed rotary air-compressors of 700 cu. ft. capacity per minute at 25 lb. per square inch provide the compressed air for agitating the slurry. Each compressor is connected to a vertical compressed-air receiver 4 ft. diameter by 12 ft. high, and each provides sufficient air for all the mixers (one being a standby). The compressors are directly coupled to 90-h.p., 720 r.p.m., motors.

Three 4-in. Wilfley centrifugal pumps are installed for mixing and circulating the slurry between any one of the eight storage tanks, and three similar pumps transfer the slurry from the storage tanks to the kiln feeders (in both cases one pump is a standby). Each pump is connected by vee-ropes to a 25-h.p., 1440 r.p.m., motor. The pumps and compressors are in a two-story reinforced concrete building 33 ft. long by 23 ft. 6 in. wide by 32 ft. 6 in. high, the lower floor housing the pumps and the upper floor the compressors.

The Rotary Kilns.

Slurry from the storage tanks is pumped through 6-in. diameter pipes to the tanks of the slurry spoon-feeders, whose speed is synchronised with the speed of the kiln. The rotating spoons deliver slurry through the central boss into a measuring pot, and from the measuring pot it gravitates through a jacketed pipe of 9 in. diameter into the inlet end of the kiln. An adjustable weir is fitted into the feed tank, the excess slurry overflowing the weir and gravitating back to the storage tanks. The slurry discharged from the slurry-wheel impinges on a paddle arrangement which operates a light indicator mounted on the kiln-control board. The feeders are driven through a worm reduction-gear by 5-h.p., 360/720 r.p.m. variable-speed motors; the direct-current motors are supplied by a direct-current generator driven from the kiln-drive motor.

The kilns (Figs. 5 and 9) are 300 ft. long overall and have a desiccator 14 ft. in diameter by 29 ft. long at the inlet end and an enlarged burning and sintering zone 85 ft. long by 11 ft. 6 in. diameter at the outlet end; the remainder of the kiln is 10 ft. in diameter. The kiln is inclined at 1 in 24 and is carried on five sets of cast-steel tyres, 14 in. to 20 in. wide, supported on cast-steel rollers (4 ft

and 4 ft. 6 in. diameter by 18 in. to 22 in. wide) shrunk on to forged-steel shafts. The shafts rotate in oil-lubricated water-cooled swivel bearings 13 in. diameter by 20 in. long; lubrication is by buckets fixed to and rotating with the shafts. The rollers and bearings are mounted on heavy cast-iron bedplates, that are near the centre of the kiln and adjacent to the driving gear, being fitted with two rollers for resisting the axial thrust of the kiln. A sealing-ring of the floating type in the hood is fixed at the outlet of the kiln, and an asbestos-type balance-weight air-seal is fixed at the inlet end to prevent air entering the kiln. Thick tangent plates are riveted to the shell of the kiln to carry the main drive gear, which is 16 ft. diameter and is of cast steel having 114 teeth of 5 in. pitch and a width of 21 in. The wheel engages with a forged-steel pinion, having 21 teeth at 5 in. pitch, mounted on a forged-steel shaft which rotates in grease-lubricated bearings 13 in. diameter by 21 in. long. On the same shaft is a gear having 79 teeth 16 in. wide at 3-in. pitch engaging with a pinion with 19 teeth and keyed to a forged-steel shaft of 9 in. diameter which rotates in grease-lubricated bearings 15 in. long. The gears are mounted on a thick box-section cast-iron bedplate, with enclosed gear cases. On one end of the pinion shaft is half a Bibby-type flexible coupling which engages with a half coupling fitted to a totally-enclosed double-reduction gear having a ratio of 720 to 22·6 r.p.m. and connected to a 140-h.p. 720 to 360 r.p.m. variable-speed motor. The gears provide a speed reduction of 720 to 1, thus giving a kiln speed of between one and half a revolution per minute. Driven from the motor shaft is a direct-current generator which supplies current to the slurry spoon-feeder motor.

The kiln is lined throughout with firebricks, the main body beyond the desiccator section for a length of about 150 ft. being 6 in. thick with an alumina content of 35 per cent., and the remainder of the lining for a length of 102 ft. 6 in., including the burning zone, is 7 in. thick with an alumina content of 58 per cent.

At the outlet end is a movable hood, also lined throughout with firebricks, through which the clinker discharges into a Fuller cooler. On the kiln side of the hood is a shroud for receiving the floating air-seal ring, while on the front of the hood are attachments for firing and hot-air pipes, inspection windows, and access doors. The outlet end of the kiln rotates in a stationary dust-chamber or smoke-chamber constructed of steel plate and lined throughout with firebricks. The lower part of the chamber is hoppered and fitted with a flap-valve through which the dust is discharged into a collecting system. Inspection and explosion doors are fitted to the chamber, together with pockets for the reception of temperture, pressure, and gas-sampling instruments. The kiln feed-pipe passing through the roof of the chamber is of the jacketed type, the dust from the collecting system being delivered through the centre while the slurry passes on the outside and washes the flue-dust into the desiccator.

KILN GASES.—The kiln gases pass from the smoke-chamber through a short flue into two Howden down-flow dust collectors, and from the collectors the gases are dealt with by an induced-draught fan. At the junction between the dust-

chamber and flue, a motor-driven winch operates an adjustable damper which is remotely controlled, with a visual position indicator, from the control panel on the burner's platform. The winch is driven by a 1-h.p., 1450 r.p.m. motor. The exhaust-gas fan has a capacity of 68,500 cu. ft. per minute and has a balanced impeller in a steel casing. The impeller is mounted on a steel shaft in oil-lubricated bearings. Between the motor drive and the impeller is a Vulcan-Sinclair hydraulic coupling of the scoop-controlled type, with arrangements for self-pumping and water-operated oil cooling. The coupling is regulated from the control board by a servo motor through a reduction gear. The fan is driven by a 200-h.p., 585 r.p.m. motor. The gases from the fan are discharged into a brick-lined steel chimney 175 ft. high by 11 ft. diameter, which receives the gases from the two kilns. Flue-dust from the smoke-chamber and dust-collectors is discharged through flap-valves into two 8-in. diameter screw-conveyors, which discharge into a totally-enclosed vertical bucket-elevator 10 in. wide, which in turn discharges into the delivery-pipe to the kiln. The conveyors are driven through worm reduction-gear by 3-h.p., 720 r.p.m. motors, and the elevator is driven through worm reduction-gear by a 7½-h.p., 720 r.p.m. motor. The clinker from the kiln is discharged into a No. 633 Fuller inclined-grate cooler, which is driven through a variable-speed gear by a 7½-h.p., 1440 r.p.m. motor.

CLINKER COOLING.—Air for the clinker cooler and secondary air for combustion are supplied by a 60-in. diameter fan which discharges through steel ducts into the cooler below the grate. The fan is driven by vee-belts by a 90-h.p., 1420 r.p.m. motor. Clinker from the cooler is discharged into a drag-chain conveyor 12 in. wide. The first 44 ft. of the conveyor is in a horizontal concrete trough under the cooler and collects the clinker that passes through the grate-plates; the remainder is inclined at an angle of 15 deg. The conveyor is driven by vee-belts through a worm reduction-gear by a 12-h.p., 720 r.p.m. motor.

The clinker is discharged from both the drag-chain conveyors on to a trough-belt conveyor 20 in. wide by 48 ft. long, which in turn discharges through a steel chute into either of two elevators, 16 in. wide by 65 ft. long, from which it is discharged on to a trough-belt conveyor 24 in. wide by 299 ft. long carried from the columns of the store building at a height of 37 ft. The conveyor is discharged by means of a travelling throw-off carriage either into the store or direct to the cement-mill feed-bunkers. The short belt-conveyor is driven through a worm reduction-gear by a 7½-h.p., 720 r.p.m. motor, and the long conveyor by a 12-h.p., 720 r.p.m. motor; the elevators are driven through a counter-shaft and worm reduction-gear by a 7½-h.p., 720 r.p.m. motor.

KILN FIRING.—The kilns are fired by pulverised coal ground in a closed-circuit without storage of ground coal. Coal containing up to 10 per cent. of moisture entering the system comes in contact with hot gases drawn from the kiln-hood, where drying takes place, and as the coal is ground in the mill the fine particles are carried by the hot gases through a classifier and fired directly into the kiln. The primary-air fan forces the gases from the kiln through the mill and the ground coal into the kiln.

Two circular steel bunkers, each of 100 tons capacity, receive coal from the store for delivery to the coal mills. Each bunker is fitted with vibrators, and high-level and low-level controls operate lights on the control panel. The lower part of the bunkers is hoppered, and fitted with a chute delivering on a No. 220 Waytrol electric vibrating feeder with a tray 18 in. wide by 30 in. long delivering to a weighing belt; here the coal from the bunker is regulated at a predetermined constant weight. The vibrator is driven by a $\frac{1}{3}$-h.p. motor, and the belt is driven by a $\frac{1}{3}$-h.p. motor through an epicyclic gear. The coal discharged from the weigher passes through a rotary air-seal into the inlet trunnion of an air-swept ball-mill 7 ft. 6 in. diameter by 10 ft. long. The mill has two chambers, the first being lined with chrome-steel stepped plates and charged with $2\frac{3}{4}$ tons of high-carbon steel balls $2\frac{1}{2}$ in. to $1\frac{1}{2}$ in. diameter, and the second is lined with hard cast-iron corrugated plates and is charged with $5\frac{1}{4}$ tons of high-carbon steel balls and Cylpebs of $1\frac{1}{4}$ in. to $\frac{3}{4}$ in. diameter.

Between the two chambers is a transverse plate secured in position by chrome-steel rings. At each end of the mill is a cast-steel head supported on water-cooled grease-lubricated bearings 26 in. diameter by 18 in. long. Attached to the outlet is a cast steel driving gear of 10 ft. diameter, having 134 teeth 9 in. wide at $2\frac{13}{16}$ in. pitch, which engage with a forged-steel pinion on a forged-steel shaft turning in self-oiling gunmetal-lined bearings $5\frac{1}{2}$ in. diameter by 12 in. long. Keyed to one end of the shaft is half a Bibby-type flexible-coupling which engages with a half-coupling fixed to the shaft of a gear which reduces the speed of the 175-h.p. motor from 720 to 130 r.p.m.

From the discharge end of the mill the ground coal is carried by the current of hot-air up a vertical pipe into a classifier, where the coarse particles are separated and discharged through a flap-valve into the inlet end of the mill for further grinding. The fine particles pass from the classifier to a fan and through a jacketed firing-pipe into the kiln. The fan has a runner of 43 in. diameter, is housed in a steel casing, and is driven by a 70-h.p., 1440 r.p.m. motor through a Vulcan-Sinclair variable-speed hydraulic coupling controlled by a servo motor operated from the control panel. Connected by pipes between the hood of the kiln and the inlet of the mill is a cyclone, 6 ft. 6 in. diameter, which removes dust from the gases and discharges it through a flap-valve on to the drag-chain conveyor.

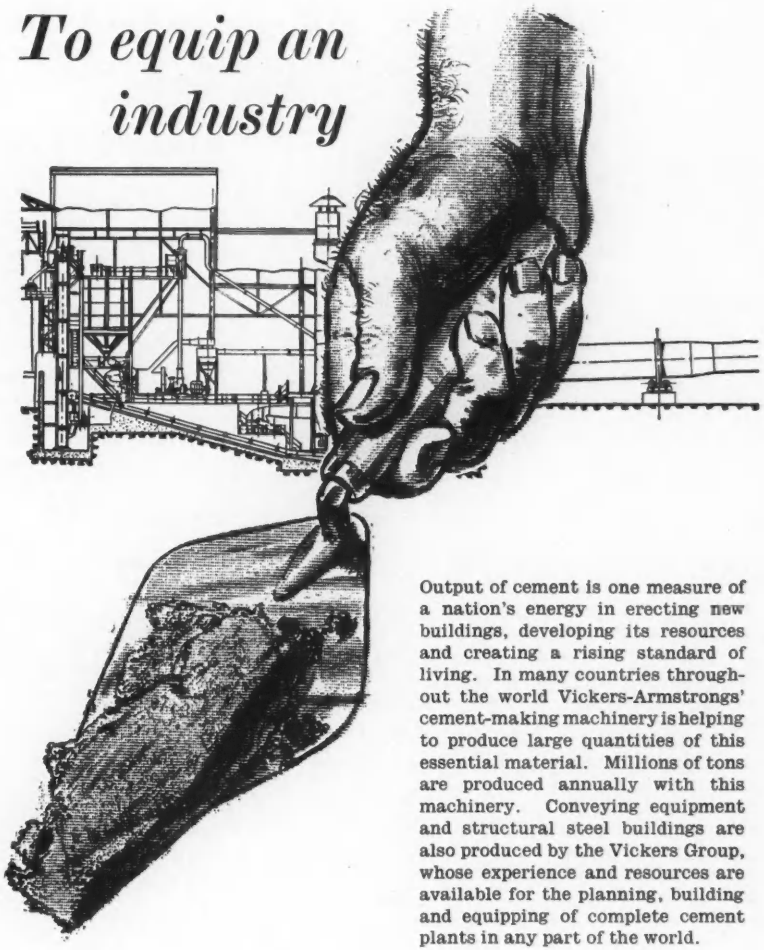
(To be concluded)

Cauldon Cement Works.

We much regret that in the advertisement of Constantin (Engineers), Ltd., in this journal for November 1957 the word "homogenization" was spelt wrongly in connection with plant supplied by this firm at the new Cauldon Cement Works.

The words "Airslide" and "F-H Airslide" are registered trade marks owned by Fuller Co., of Catasauqua, Penn., U.S.A., and the registered users of these trade names in Great Britain are Constantin (Engineers), Ltd., of 123, Victoria Street, London, S.W.1.

To equip an industry



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New Plant for Calcium Aluminate Cement.

A plant for the manufacture of a new type of high-alumina (or calcium-aluminate) cement has been erected at the works at West Thurrock, Essex, of the Lafarge Aluminous Cement Co., Ltd. The new material, known as Secar 250, is a white calcium-aluminate cement with an alumina content of over 70 per cent., and iron compounds and silica impurities of less than 1 per cent. An identical material, made in France, is at present being sold by the Company in the United Kingdom.

This new product substantially increases the temperature range over which refractory castables may be used. In addition to its refractory characteristics it will have the same rapid-hardening and corrosion-resistant properties as high-alumina cement.

The raw materials are weighed and mixed before being introduced dry into an oil-fired rotary kiln (*Fig.* 1) lined with refractory concrete made with Secar

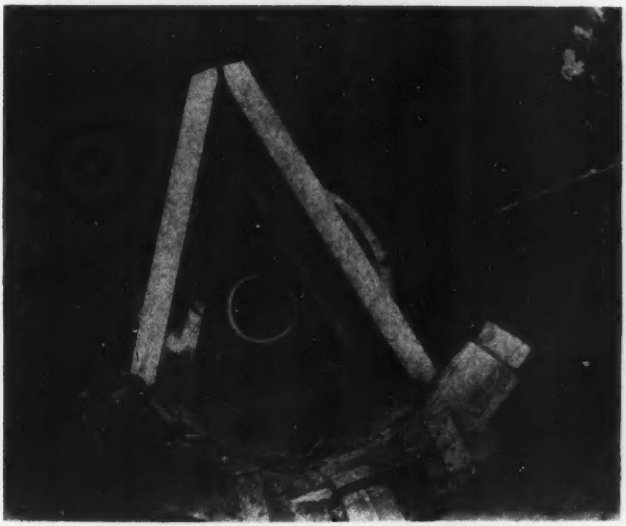

Fig. 1—Method of Placing Lining.

cements. In the hot zone the lining is 7 in. thick, comprising 2 in. made with insulating aggregate against the steel shell, and 5 in. made with pure fused alumina cast integrally with it to form the hot face. The cooler sections of the kiln are lined to the complete depth of 7 in. with concrete made with Secar and calcined kaolin. This lining will resist the high temperatures and also provide a lining of exceptional purity to avoid contamination of the raw materials in the kiln. After leaving the kiln the clinker will pass through a rotary cooler and thence to a tube mill where it will be ground to the required fineness.

Rate of Wear of Grinding Media.

IN a recent article by F. Kraus in "Zement-Kalk-Gips", a survey is given of the use of a short bucket-conveyor tube-mill about 9 ft. diameter by 20 ft. long working in combination with a centrifugal separator. From March 1953, to the end of September 1955, the mill was operated for 19,200 hours, and 327,000 tons of cement of different types were ground in it.

The total power consumption during the period was 10,321,000 kWh., including, in addition to the motors driving the mill, the power for ancillary equipment such as clinker feed-conveyors, air-slide conveyors, the separator and air fans, and dust-extraction equipment. The average consumption was thus 31½ kWh. per ton for an average output of 17 tons per hour. If the total output of various types of cement be related to ordinary Portland cement only (the German Z225 cement) the consumption was 28·4 kWh. per ton for an hourly output of about 19 tons.

In the author's opinion the reasons for this low power consumption become clear if it is compared with his earlier data relating to this mill reported in "Zement-Kalk-Gips" for July 1954. The output increased from 19·7 tons per hour to 21·5 tons per hour and the power consumption reduced from 43·2 kWh. to 27·4 kWh. per ton. The improved results are ascribed to the use of better lining-plates in the mill and to increased output due to the installation of Fuller coolers on both the Lepol kilns about eight months before the end of the test. More efficient servicing of the whole installation was also considered to have contributed to greater efficiency.

During the test a change was made in the size of half of the balls in the first chamber from 80 mm. diameter to 90 mm. diameter. The change was made during a period of three weeks. All the balls in the first chamber were replaced completely every six months and in the second chamber every twelve months.

After two years of operation only the lining of the front of the diaphragm separating the two chambers required replacement, so that up to the end of the test only one set of lining plates was used and the final loss of thickness of these plates was 6 mm. to 10 mm. in the first chamber and from 4 mm. to 6 mm. in the second chamber, that is about 12 per cent. The lining plates in the first chamber were of the classifier type and those in the second chamber were ordinary cylindrical grinding plates.

TABLE I.

	Total weight (kg.)	Loss of weight	
		Grammes per ton of cement	Grammes per kWh.
Lining plates	6,000	18·4	0·6
Balls: first chamber ..	24,000	73·0	2·3
Balls: second chamber ..	30,000	92·0	2·9
Total (balls only)	54,000	165·0	5·2

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The total loss of weight due to wear of the balls was about 54,000 kg.; the rate of wear in grammes of metal is given in *Table* I. The balls were carbon steel, either pure or with a small amount of alloy; both types had a compressive strength of 90 kg. to 110 kg. per square centimetre.

Cement Exported from Iraq.

About 100,000 tons of cement were exported from Iraq to neighbouring countries in 1957, and it is expected that exports in 1958 may be 300,000 tons.

The Cement Industry in China.

In 1957, about 6,500,000 tons of cement were produced in China, and it is hoped to increase the capacity of the industry to 12,500,000 tons by 1962. A new works at Yung-ting, near Lanchow, started production in December, 1957; the works will produce silicate cement and a special cement for use in the Yumen oilfield.

The Cement Industry in Israel.

In the year 1957, 720,000 tons of cement were produced in Israel. The corresponding figures are 663,000 tons in 1955 and 621,000 tons in 1956.

Proposed New Cement Works in Lebanon.

It is reported that the Lebanese Government is considering granting licences for the erection of more cement works.

A Cement Factory in Nigeria.

A cement factory at Nkalagu, in the Eastern Region of Nigeria, has started, production. It was built at a cost of £2,250,000 for the Nigerian Cement Co., Ltd., and has a capacity of about 100,000 tons a year. The works will be managed by the Tunnel Portland Cement Co., Ltd.

A Cement Factory in the Canary Islands.

Production has started at a cement factory at Arguineguin, Las Palmas. The basic material used is pozzolana, which is plentiful in the Canary Islands.

The Cement Industry in Colombia.

The capacity of the cement industry in Colombia was doubled in February last, when two new factories began production. Other cement works are in course of construction.

Cement Production in Thailand.

The production of cement in Thailand was 400,000 tons in the year 1956 compared with 386,000 tons in the previous year, and it is expected that when the new plant now being installed is in operation production will be at the rate of 500,000 tons a year.

New Cement Works for Costa Rica.

After rejecting offers of private concerns to erect and operate a cement works in Costa Rica, the Government has decided to build a cement works which will be operated by the National Housing Institute and the Government-owned Pacific Electric Railway.

The Cement Industry in Venezuela.

C.A. Venezolana de Cementos intends to extend its cement factories at Barquisimeto, Maracaibo, and Pertigalete, thereby increasing its capacity from 2780 to 4600 tons a day. The company also proposes to build a new factory at Puerto Ordaz. C.A. Cemento Carabobo Sucra is installing a new kiln.

Cement Production in Jamaica.

Additional plant has been installed by the Caribbean Cement Co., Ltd., at its factory near Kingston. The capacity of the company is reported to be now 300,000 tons a year.

The Cement Industry in Switzerland.

It is estimated that about 2,500,000 tons of cement were used in Switzerland during 1957, of which 25 per cent. was used in hydro-electric works. The consumption in 1958 is expected to be less.

New Cement Works in Chile.

A cement works with a capacity of 50,000 tons a year is to be built by Cemento Bio-Bio S.A., at Huachipato. Slag will be used from the steel works of Cia Aero de Pacifico.

New Cement Works for Syria.

The Syrian Ministry of the Interior has authorised the construction of a cement works near Aleppo.

Japanese Cement Association.

An association has been formed in Japan by eleven cement producers to develop the use of cement. The objects of the association are (i) To organise yearly conferences between chemists, engineers, and the users of cement; (ii) To undertake research on cement and concrete; (iii) To improve construction practice in relation to cement and concrete; (iv) To organise a testing laboratory; and (v) To publish research reports and other information.

The president of the association is Mr. Kiyoshige Matsushima, president of the Osaka Yogyo Cement Co., Ltd., and its address is No. 1—(2) Akasaka-Daimachi, Minato-Ku, Tokyo, Japan.

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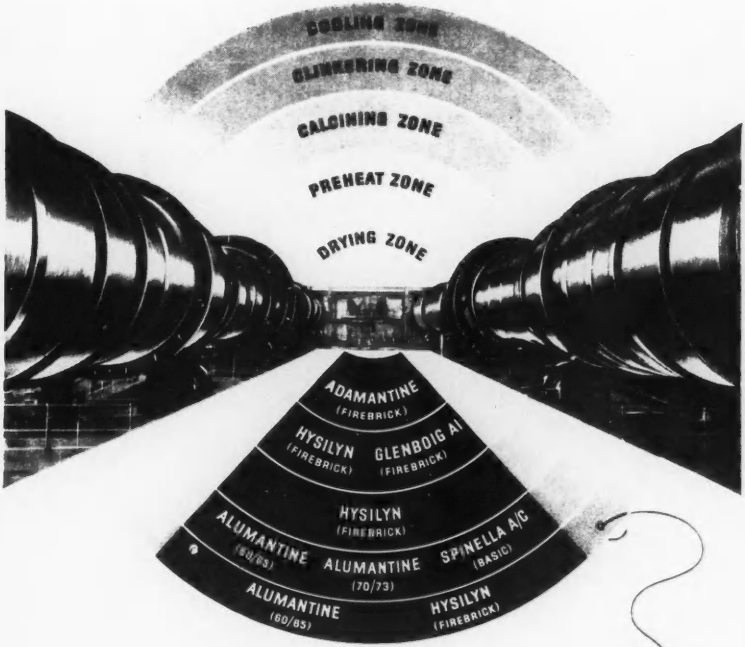

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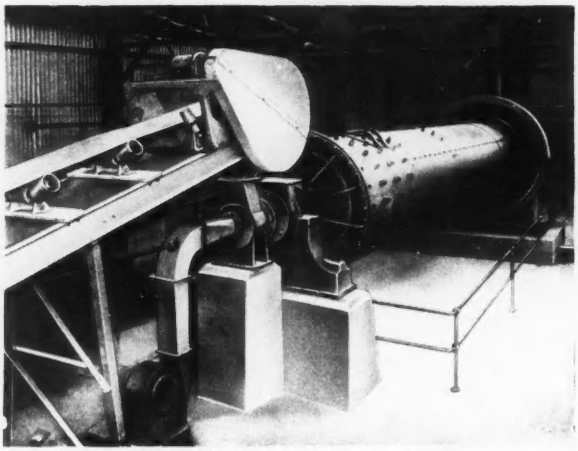

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